IN THE CLAIMS

Please amend the claims as follows:

1. (Previously presented) A method of driving a piezoelectric actuator,

wherein a piezoelectric element has an asymmetrical hysteresis characteristic of polarization-electric field different in each of absolute values of a coercive field of positive electric field and a coercive field of negative electric field, the method comprising the steps of:

polarizing the piezoelectric element in a film thickness direction thereof and in a direction of electric field of smaller absolute value in comparison with the coercive field of the positive electric field and the coercive field of the negative electric field; and

applying, as a position control voltage for position control by distorting said piezoelectric element in a direction orthogonal to the film thickness direction of said piezoelectric element, a voltage equivalent to an electric field of 0.4 or less of said large absolute value in the film thickness direction of said piezoelectric element in a direction of electric field of larger absolute value between the absolute value of the coercive field of the positive electric field and the coercive field of the negative electric field.

2. (Previously presented) A method of driving a piezoelectric actuator,

wherein a piezoelectric element has an asymmetrical hysteresis characteristic of polarization-electric field different in each of absolute values of a coercive field of positive electric field and a coercive field of negative electric field, the method comprising the steps of:

polarizing the piezoelectric element in a film thickness direction thereof and in a direction of electric field of smaller absolute value between the coercive field of the positive electric field and the coercive field of the negative electric field; and

applying, as a position control voltage for position control by distorting said piezoelectric element in a direction orthogonal to the film thickness direction of said piezoelectric element, a voltage equivalent to not more than the absolute value of a midpoint of the coercive field of the positive electric field and the coercive field of the negative electric field, in comparison with each of absolute values of the coercive field of the positive electric field and the coercive field of the negative electric field.

3. (Canceled)

4. (Currently amended) ~~The driving method of piezoelectric actuator of claim 3,~~ A driving method of piezoelectric actuator, the method comprising the steps of:

applying a position control voltage to a piezoelectric element polarized in a film thickness direction, in the film thickness direction of said piezoelectric element, and the positioning of the piezoelectric element is controlled by distorting in a direction orthogonal to the film thickness direction, and

wherein during said positioning, a polarization recovery voltage for recovering from deterioration of polarization is temporarily superposed and temporarily applied on the position control voltage, or

the polarization recovery voltage for recovering from deterioration of polarization is temporarily applied by changing over with the position control voltage in a film thickness direction of the piezoelectric element, or

the polarization recovery voltage for recovering from deterioration of polarization is temporarily applied in a film thickness direction of the piezoelectric element when the position control voltage is not applied,

wherein said piezoelectric element has an asymmetrical hysteresis characteristic of polarization-electric field different in absolute values between a coercive field of positive electric field and a coercive field of negative electric field, and its polarizing direction is the film thickness direction of said piezoelectric element and a direction of smaller absolute value in comparison with the coercive field of the positive electric field and the coercive field of the negative electric field.

5. (Currently amended) The driving method of piezoelectric actuator of claim [[3 or]] 4, wherein the impression time of said polarization recovery voltage is 0.01 second or more to 60 seconds or less.

6. (Currently amended) The driving method of piezoelectric actuator of claim [[3 or]] 4, wherein said polarization recovery voltage is applied intermittently.

7. (Currently amended) The driving method of piezoelectric actuator of claim [[3 or]] 4, further comprising:

detecting means for detecting fluctuations of displacement of said piezoelectric element,

wherein said polarization recovery voltage is applied to said piezoelectric element when the displacement becomes smaller than a preset level.

8. (Currently amended) The driving method of piezoelectric actuator of any one of claims 1, 2 and [[to]] 4, wherein said piezoelectric element is composed of a first conductor, a second conductor, and a piezoelectric thin film enclosed between said first conductor and said second conductor.

9. (Currently amended) The driving method of piezoelectric actuator of any one of claims 1, 2 and [[to]] 4, wherein said piezoelectric element is a laminated piezoelectric composition composed by using two pieces each of first conductors, second conductors, and piezoelectric thin films enclosed between said first conductors and said second conductors, and adhering said second conductors with each other.

10. (Previously presented) A piezoelectric actuator comprising:

a piezoelectric element having an asymmetrical hysteresis characteristic of polarization-electric field different in absolute values between a coercive field of positive electric field and a coercive field of negative electric field, being polarized in the film thickness direction of said piezoelectric element and in a direction of smaller absolute value between the absolute value of the coercive field of the positive electric field and the coercive field of the negative electric field, and

a control circuit including a position control voltage circuit for applying a position control voltage for controlling the position by distorting said piezoelectric element in a direction orthogonal to the film thickness direction, said control circuit further includes a polarization recovery voltage circuit for applying a polarization recovery voltage for restoring the polarization of said piezoelectric element.

11. (Cancelled)

12. (Previously presented) A piezoelectric actuator comprising:

a piezoelectric element polarized in a film thickness direction,

a position control voltage circuit for applying a position control voltage for controlling the position by distorting said piezoelectric element in a direction orthogonal to the film thickness direction,

a polarization recovery voltage circuit for applying a polarization recovery voltage for restoring the polarization of said piezoelectric element, and

a control circuit for controlling said position control voltage circuit and said polarization recovery voltage circuit,

wherein said piezoelectric element has an asymmetrical hysteresis characteristic of polarization-electric field different in absolute values between a coercive field of positive electric field side and a coercive field of negative electric field side, and is polarized in the film thickness direction of said piezoelectric element and in a direction of smaller absolute value of said coercive field.

13. (Cancelled)

14. (Previously presented) The piezoelectric actuator of claim 10 or 12, wherein said control circuit further includes a switch circuit for changing over said position control voltage circuit and said polarization recovery voltage circuit.

15. (Previously presented) The piezoelectric actuator of claim 10 or 12, wherein said control circuit further includes a superposing circuit for superposing said polarization recovery voltage on said position control voltage.

16. (Original) The piezoelectric actuator of claim 15, wherein said control circuit further includes a limiting circuit for limiting the output voltage issued from said superposing circuit to a preset voltage.

17. (Original) The piezoelectric actuator of claim 10 or 12, wherein said piezoelectric element is composed of a first conductor, a second conductor, and a piezoelectric thin film enclosed between said first conductor and said second conductor.

18. (Original) The piezoelectric actuator of claim 10 or 12, wherein said piezoelectric element is a laminated piezoelectric composition composed by using two pieces each of first conductors, second conductors, and piezoelectric thin films enclosed between said first conductors and said second conductors, and adhering said second conductors with each other.

19. (Original) The piezoelectric actuator of claim 10 or 12, wherein said piezoelectric element is composed of a pair, each one of said pair comprising a first conductor, a second conductor, and a piezoelectric thin film enclosed between said first conductor and said second conductor, and the individual ones of said first conductor, said second conductor, and said

piezoelectric thin film enclosed between said first conductor and said second conductor are disposed mirror-symmetrically on a same plane, on the basis of a plane orthogonal to said plane.

20. (Original) The piezoelectric actuator of claim 10 or 12, wherein said piezoelectric element is a pair of laminated piezoelectric compositions each composed by using two pieces each of first conductors, second conductors, and piezoelectric thin films enclosed between said first conductors and said second conductors, and adhering said second conductors with each other, and the individual ones of said laminated piezoelectric compositions are disposed mirror-symmetrically on a same plane, on the basis of a plane orthogonal to said plane.

21. (Original) A head support mechanism comprising:

a head for at least recording or reproducing,

a head slider on which said head is mounted,

a flexure to which said head slider is attached, and

a piezoelectric actuator including a piezoelectric element fixed on said flexure adjacently to said slider, and a control circuit for controlling the position by expanding or contracting said piezoelectric element,

wherein said piezoelectric actuator is a piezoelectric actuator of claim 19.

22. (Original) A head support mechanism comprising:

a head for at least recording or reproducing,

a head slider on which said head is mounted,

a flexure to which said head slider is attached, and

a piezoelectric actuator including a piezoelectric element fixed on said flexure adjacently to said slider, and a control circuit for controlling the position by expanding or contracting said piezoelectric element,

wherein said piezoelectric actuator is a piezoelectric actuator of claim 20.

23. (Original) A disk recording and reproducing apparatus comprising:

a disk recording medium,

a head for at least recording or reproducing in said disk recording medium,

a head slider on which said head is mounted,

a flexure to which said head slider is attached,

a piezoelectric actuator including a piezoelectric element fixed on said flexure adjacently to said slider, and

a control circuit for controlling the position by expanding or contracting said piezoelectric element, an arm for supporting said flexure, a bearing for rotatably supporting said arm, and rotating means for rotating said arm in a radial direction of said disk recording medium,

wherein said piezoelectric actuator is a piezoelectric actuator of claim 19.

24. (Original) A disk recording and reproducing apparatus comprising:

a disk recording medium,

a head for at least recording or reproducing in said disk recording medium,

a head slider on which said head is mounted,

a flexure to which said head slider is attached,

a piezoelectric actuator including a piezoelectric element fixed on said flexure adjacently to said slider, and

a control circuit for controlling the position by expanding or contracting said piezoelectric element, an arm for supporting said flexure, a bearing for rotatably supporting said arm, and rotating means for rotating said arm in a radial direction of said disk recording medium,

wherein said piezoelectric actuator is a piezoelectric actuator of claim 20.

25. (Original) The disk recording and reproducing apparatus of claim 23 or 24, further comprising:

a level detecting circuit for detecting the difference of an output level of middle position of recording track of said disk recording medium and an output level by impression of a preset position control voltage to the piezoelectric element, when reading out servo signal recorded in said disk recording medium by said head,

wherein a polarization recovery voltage is applied from said control circuit when the difference of said levels becomes smaller than a preset level.